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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of: **Hiroshi Nemoto and Kenshin Kitoh**

Ser. No.: 09/997,604

Group Art Unit: 1745

Filed: November 29, 2001

Examiner: Susy N Tsang-Foster

Confirmation No.: 5235

For: **LITHIUM SECONDARY BATTERY**

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P.O. Box 1450
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RESPONSE TO OFFICE ACTION

Sir:

The following is in response to the Office Action mailed March 6, 2003.

Claims 12 and 19 were rejected under 35 U.S.C. § 112, first paragraph.

The original specification, page 5, lines 12-15, discloses that the primary particles preferably contain primary particles in which at least one side of each flat crystal face has a length of 0.2 μm or more, preferably 1 μm or more. The applicants agree with the U.S. PTO that the present specification provides support for claims in which the primary particles include both (1) particles having at least one side of each flat crystal face of length of 1 μm or more as well as (2) particles which do not satisfy this feature. It is respectfully submitted that

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the original specification would reasonably convey to those of skill in the art that the inventors had possession of subject matter in which the primary particles *consist essentially* of particles satisfying this feature, in view of the disclosure in the present application that the presence of primary particles which satisfy this feature is preferred. Furthermore, as described in the original specification, page 8, lines 7-20, in addition to primary particles having octahedral shape, the present invention also relates to primary particles of other shapes, namely, (a) particles wherein the apex formed by intersection of four crystal faces is not complete and is in the form of a plane or an edge, (b) particles in which a different crystal face is formed at an edge formed by intersection of two crystal faces, and (c) particles in which one crystal face is jointly owned by two primary particles or in which a primary particle grows from the surface of another primary particle. All of these shapes are encompassed by "substantially octahedral shape", as are shapes formed by partial chipping of the above shapes or joint possession of crystal faces between two primary particles. Claim 12, by virtue of its dependency on claim 10, recites that the primary particles have a *substantially* octahedral shape.

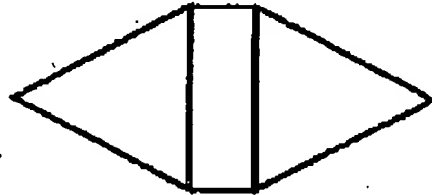
The Office Action further contends that the statement in the present specification that "[t]he particle diameters of the primary particles are expressed as particle diameters obtained by the analysis of SEM image because the separation of individual particles and the particle diameter measurement for individual particles are impossible" (original specification, page 9, lines 14-18) gives rise to a basis for this rejection. As noted above, the expression "substantially octahedral shape" encompasses shapes that are outside the scope of single particles of octahedral shape. Moreover, the complete text of the sentence (from which only a portion is quoted in the Office Action) describes how the particle diameters of the primary particles are analyzed and expressed. In view of the above, it is respectfully submitted that the claims, read in light of the specification, set forth the claimed subject matter with language which is as precise as the subject matter permits.

Reconsideration and withdrawal of this rejection are requested.

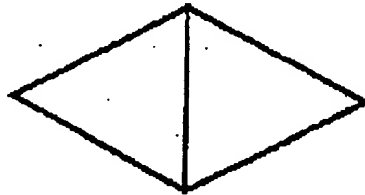
Claims 10-14 and 17-21 were rejected under 35 U.S.C. §102(b) or 35 U.S.C. §103(a) over JP 08-217452 (JP '452).

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JP '452 discloses regular-octahedron needle-like particles (see the machine translation, page 8, line 34). Regular-octahedron needle-like particles are well known in the art to have a shape which distinctly differs from the substantially octahedral shape as described in the present specification. In particular, a regular-octahedron needle-like particle is of the following shape:



whereas an octahedral shape has the following shape:



JP '452 fails to contain any disclosure which suggests any desirability of a substantially octahedral shape, nor any steps by which a substantially octahedral shape could be obtained instead of the regular-octahedron needle-like shape obtained according to the description in JP '452.

Accordingly, reconsideration and withdrawal of this rejection are requested.

Claims 15, 16, 22 and 23 were rejected under 35 U.S.C. §103(a) over JP '452 in view of U.S. Patent No. 5,700,597 (Zhong '597).

Zhong '597 is relied on in the Office Action for alleged disclosure of high energy density. Accordingly, any such disclosure in Zhong '597 would not overcome the shortcomings of JP '452 as attempted to be applied against claims 10 and 17, from which claims 15, 16, 22 and 23 each ultimately depend.

Reconsideration and withdrawal of this rejection are requested.

Claims 10-14 and 17-21 were rejected under 35 U.S.C. §102(a) or under 35 U.S.C. §103(a) over GB 2 328 684 (GB '684).

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GB '684 discloses lithium manganese oxide powder having an octahedral particle shape, preferably having particle size of 0.3-1 micron. The Office Action refers to no disclosure in GB '684 which would indicate that the particles in GB '684 include particles in which each flat crystal face has at least one side which is of a length of 1 μm or more. Furthermore, particle shape, composition and primary particle size of a material do not dictate whether or not such particles would include particles in which each flat crystal face has at least one side of a length of 1 μm or more.

Furthermore, GB '684 fails to contain any disclosure which would motivate one of skill in the art to shape or produce the particles disclosed in GB '684 so as to include particles in which each flat crystal face has at least one side of a length of 1 μm or more. Accordingly, reconsideration and withdrawal of this rejection are requested.

Claims 15, 16, 22 and 23 were rejected under 35 U.S.C. §103(a) over GB '684 in view of Zhong '597.

As above, Zhong '597 is relied on in the Office Action for alleged disclosure of high energy density. Accordingly, any such disclosure in Zhong '597 would not overcome the shortcomings of GB '684 as attempted to be applied against claims 10 and 17, from which claims 15, 16, 22 and 23 each ultimately depend.

Claims 10-14 and 17-21 were rejected under 35 U.S.C. §102(b) or under 35 U.S.C. §103(a) over U.S. Patent No. 5,631,104 (Zhong '104).

The Office Action contains statements relating to the general method of manufacturing the positive electrode active material of Zhong '104. It is well known that the specific raw materials and firing conditions employed in making such particles control the shape and size of the resulting particles, and that, depending on the specific raw materials and firing conditions employed, the shape and dimensional characteristics of the particles can vary widely.

Zhong '104 fails to disclose or suggest raw materials and firing conditions which would inherently result in primary particles which have a substantially octahedral shape constituted mainly by flat crystal faces, including particles in which each flat crystal face has at least one side of a length of 1 μm or more. In addition, Zhong '104 fails to provide motivation or guidance which would lead one of skill in the art to make selections so as to result in particles having these features.

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Accordingly, the subject matter recited in claims 10-14 and 17-21 is neither anticipated by nor obvious in view of Zhong '104. Accordingly, reconsideration and withdrawal of this rejection are requested.

Claims 10-14 and 17-21 were rejected under 35 U.S.C. §102(e) or under 35 U.S.C. §103(a) over U.S. Patent No. 5,961,949 (Manev '949).

As with Zhong '104, the Office Action contains statements relating to the general method of manufacturing the positive electrode active material of Manev '949. It is well known that the specific raw materials and firing conditions employed in making such particles control the shape and size of the resulting particles, and that, depending on the specific raw materials and firing conditions employed, the shape and dimensional characteristics of the particles can vary widely.

Manev '949, like Zhong '104, fails to disclose or suggest raw materials and firing conditions which would inherently result in primary particles which have a substantially octahedral shape constituted mainly by flat crystal faces, including particles in which each flat crystal face has at least one side of a length of 1 μm or more. Also, like Zhong '104, Manev '949 fails to provide motivation or guidance which would lead one of skill in the art to make selections so as to result in particles having these features.

Accordingly, the subject matter recited in claims 10-14 and 17-21 is neither anticipated by nor obvious in view of Manev '949. Accordingly, reconsideration and withdrawal of this rejection are requested.

Claims 15, 16, 22 and 23 were rejected under 35 U.S.C. §103(a) over Zhong '104 in view of Zhong '597. Claims 15, 16, 22 and 23 were rejected under 35 U.S.C. §103(a) over Manev '949 in view of Zhong '597. In both of these rejections, Zhong '597 is relied on in the Office Action for alleged disclosure of high energy density. Accordingly, any such disclosure in Zhong '597 would not overcome the shortcomings of Zhong '104 or Manev '949 as attempted to be applied against claims 10 and 17, from which claims 15, 16, 22 and 23 each ultimately depend.

In view of the above, claims 10-23 are in condition for allowance.

If the Examiner believes that contact with Applicant's attorney would be advantageous toward the disposition of this case, the Examiner is herein requested to call Applicant's attorney at the phone number noted below.


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The Commissioner is hereby authorized to charge any additional fees associated with this communication or credit any overpayment to Deposit Account No. 50-1446.

Respectfully submitted,

June 23, 2003

Date



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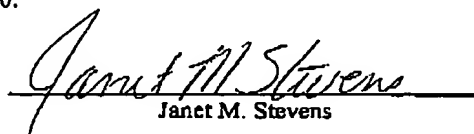
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